

REMARKS

The applicants note with appreciation the acknowledgement of the claim for priority under section 119 and the notice that all of the certified copies of the priority documents have been received.

The applicants acknowledge and appreciate receiving an initialed copy of the form PTO-1449 that was filed on 9 July 2003.

Claims 1-18 are pending. Claims 16-18 are new. The applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks.

In discussing the rejection of the claims under section 112 in the office action, all the cited examples of errors were in the specification. Therefore, although not explicitly stated, it appears that the examiner objected to the specification. A substitute specification is attached. The specification has been edited to clarify the language, and the specification is considered to be clear and consistent with the claims.

Claims 1-15 were rejected under 35 USC 112, second paragraph, as being indefinite. The applicants respectfully request that this rejection be withdrawn for the following reasons.

The claims have been clarified and the grammar of the claims has been improved to remove any indefiniteness. The claims are considered to be definite and examination of the claims on the merits is respectfully requested.

The following is a brief explanation of the invention to help the examiner's understanding. In two of the sections of Fig. 7, the graphs included broken lines labeled "Related." These dotted

lines represent the behavior of a conventional hybrid compressor control device that lacks the present invention. Note that the displacement reaches the level marked as "Required" more quickly by virtue of the invention in the fourth graph of Fig. 7, which is labeled "Displacement." Thus, the purpose of the invention is to rapidly achieve a desired displacement after the compressor starts.

In a conventional control device, the required displacement is achieved only by using the control valve current S. See the third graph of Fig. 7 and note the broken line. The current is obtained from a state of the refrigeration circuit and corresponds to the current in a state where the required displacement is being achieved. Before the compressor starts, the number of motor revolutions is increased. See the second graph in Fig. 7. Once the number of motor revolutions reaches the level R, the control valve current is applied to the capacity control valve to start changing the swash plate inclination from the minimum inclination to the required inclination. See the third and fourth graphs of Fig. 7. Thus, at this time, the compressor starts compressing. However, it takes a relatively long time for the displacement to reach the required level as shown by the broken line in the fourth graph of Fig. 7.

In contrast, in the apparatus of the present invention, an initial control valve current SS is applied to the capacity control valve to cause the swash plate to quickly reach the required displacement. This initial control valve current SS is larger than S mentioned above. Subsequently, the control valve current is reduced from SS to S.


In the second embodiment of Fig. 9, the initial control value is a number of motor revolutions SR, as shown in the second graph of Fig. 9. In this case, when the number of motor revolutions reaches SR, the control valve current S is applied to the capacity control valve to cause the compressor to start compressing. Like SS, the initial control value SR is only

maintained for time T1 and is then changed to R, which is a value obtained from the state of the refrigeration circuit.

In view of the foregoing, the applicants respectfully submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

Please charge any unforeseen fees that may be due to Deposit Account No. 50-1147.

Respectfully submitted,


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